LARVICIDE PRODUCTS CONSIDERED FOR USE AS PART OF THE CITY OF SEATTLE'S INTEGRATED PEST MANAGEMENT PROGRAM (IPM) FOR WEST NILE VIRUS - (See IPM Plan)

Products	Active Ingredient	How It Works[1,2]	Application Information[1]	Human Health and Environmental Risks [1,2]
Aquabac (200g) Vectobac Granular	Bti - Bacillus thuringiensis israelensis	Bti is a bacterium that when ingested produces protein crystal toxic to mosquito and midge larvae	7-14 day interval between applications. Larvae control.	Cannot be applied to potable water. Minimal to nonexistent nondietary/dermal risk to infants and children. Non-toxic to most non-target species, moderately toxic to Daphnia. No reported effect on fish and amphibians. No reported effect on warm-blooded mammals. Labels indicate that direct contact may cause mild to moderate eye or skin irritation.
Bactimos Briquets	Bti - Bacillus thuringiensis israelensis		Effective for 30 days or more. Larvae control.	
VectoLex WDG	Bs - Bacillus sphaericus	Bs is a naturally occurring bacterium which produces a protein endotoxin that is active against larvae when digested	Reapply as needed after 1-4 weeks. Larvae control in water with high organic content. Effective against *Culex spp*; less effective against other species.	Cannot be applied to potable water. Essentially non-toxic to humans. No risks to wildlife, nontarget species or the environment. Not acutely toxic to freshwater and saltwater invertebrates, does not appear to be harmful to fish and other marine life, not toxic to birds on a sub chronic basis, not pathogenic, infective nor toxic to lab animals by oral, dermal pulmonary or intra-venous routes. In humans, mild skin and eye irritation can occur with direct contract.
Agnique MMF	Monomolecular surface film Poly(oxy-1,2-ethanediyl)Alphaisocta -decylhydroxy	MMF reduces the surface tension of water, disrupting the mosquitoes' ability to use the water's surface to breed	Reapply as necessary. Average persistence is 5-14 days. Larvicidal action in 24-72 hours. Pupicidal action in 24 hours.	Can be applied to potable water. Does not pose a risk to human health. Films pose minimal risks to the environment. Non-toxic to most non-target wildlife. Not a skin irritant, only a mild eye irritant on prolonged or repeated contact, and is considered to be non-toxic by animal tests.

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Altosid Briquets	Methoprene	Methoprene mimics a natural juvenile hormone, keeping mosquitoes from maturing into adults	Effective through 4 volume changes over a 30 day interval under typical conditions. Larvae control.	Cannot be applied to potable water. Does not pose unreasonable risks to human health. Moderately toxic to warm water, freshwater fish, slightly toxic to cold water, freshwater fish, highly acutely toxic to most invertebrates. Studies indicate methoprene is of low toxicity and poses little risk to people. Not shown to have any significant toxicological effects in the standard tests used to assess human health effects. Very low acute oral and inhalation toxicity potential and is not an eye or skin irritant or skin sensitizer.
Altosid Pellets granular	Methoprene		Effective up to 30 days under typical conditions. Larvae control.	
Golden Bear Oil	Paraffinic white mineral oil	A light oil which spreads over the water surface, preventing larvae and pupae from obtaining oxygen through the surface film Coordination with Department of Fish and Wildlife and Department of Natural Resources is required prior to use	Forms thin sheet of oil on the surface that persists for 12-15 hours. Larvae and pupae control	Oils do not pose a risk to human health. If misapplied, oils may be toxic to fish and other aquatic organisms. Precautions noted on label. Does not appear to effect fish because oil only remains on surface for a short period and then evaporates. It may deplete fish food source. Aquatic invertebrates, amphibians, waterfowl; and furbearers may be deleteriously effected.

[1]This information is provided as a guide. Always follow label directions and consult the MSDS.

[2] This information is taken from the Washington Department of Ecology DNS on the statewide Best Management Practices in and IPM Plan in support of Ecology's NPDES general permit for aquatic mosquito control and the Washington State Department of Health Mosquito-borne Disease Response Plan November 2002 (pp 86-88). Please refer to these documents for additional information and sources.